CLAIMS

1. A method of producing two or more simultaneous data calls for one mobile station in a mobile communication system, **characterized** in that the method comprises the steps of

assigning only one common traffic channel to two or more simultaneous calls of the mobile station, and

sharing the capacity of the common traffic channel between the simultaneous calls.

2. A method according to claim 1, **characterized** in that the capacity of said common traffic channel is adjusted dynamically, for example by changing the number of the allocated subchannels in the traffic channel, by changing channel coding, or by changing the ratio of chip rate to data rate in the code division multiple access system.

3. A method according to claim 2, **characterized** by

assigning said common traffic channel to the mobile station when the first call or calls are set up,

increasing the capacity of the common traffic channel or reallocating the allocated capacity when a new call, or a new connection of an old call, is added to the traffic channel,

decreasing the capacity of the common traffic channel or reallocating the allocated capacity when a call or a connection of a call is cleared from the traffic channel, and

releasing the common traffic channel after the last call has been cleared.

4. A method according to ~~any one of the preceding claims~~ claim 1, **characterized** in that the type of at least one of the calls is one of the following: a pure non-transparent call; a pure transparent call; a call comprising two or more connections, ~~e.g. at least one non-transparent connection and at least one transparent connection; and a packet-switched call~~

5. A method according to ~~any one of the preceding claims~~ claim 1, **characterized** by

establishing one radio link protocol or link access control protocol over the traffic channel between the mobile station and an interworking function,

establishing a logical channel for each call or each connection of each call inside said one radio link protocol or link access control protocol,

transmitting the user data of each call or each connection of each call via the respective logical channel.

6. A method according to ~~any one of claims 1 to 4,~~ claim 1 **characterized** by

establishing a dedicated radio link protocol or a link access control protocol for each call or each connection over the traffic channel between the mobile station and the interworking function,

transmitting user data of each call or connection via the logical channel established by the respective radio link protocol or link access control protocol.

7. A method according to ~~any one of claims 1 to 4,~~ claim 1 **characterized** by

establishing one radio link protocol or link access control protocol over the common traffic channel between the mobile station and the interworking function,

transmitting data packets of a packet-switched call either interleaved with the protocol frames of the radio link protocol or the link access control protocol or encapsulated in the protocol frames.

8. A method according to ~~any one of claims 1 to 4,~~ claim 1 **characterized** by

establishing a radio link protocol or a link access control protocol for each call or each connection over the common traffic channel between the mobile station and the interworking function,

transmitting the data packets of a packet-switched call either interleaved with the protocol frames of the radio link protocol or the link access control protocol or encapsulated in the protocol frames.

9. A method according to ~~any one of the preceding claims,~~ claim 1 **characterized** by

detecting that the mobile communication network is temporarily unable to allocate more transmission capacity or the required transmission capacity to the common traffic channel when a new call or connection is established,

reallocating the available capacity of the common traffic channel to the calls,

allocating the requested capacity to the common traffic channel later when capacity becomes available in the network.

10. A method according to claim 9, **characterized** by

allocating the requested capacity to transparent calls or connections and the remaining capacity to non-transparent calls or connections when the mobile communication network is temporarily unable to allocate more transmission capacity or the requested amount of transmission capacity to the common traffic channel,

allocating the requested capacity to non-transparent calls or connections later when capacity becomes available in the network.

11. A method according to ~~any one of the preceding claims~~ claim 1, **characterized** by

monitoring the traffic of at least one call or connection on the traffic channel,

detecting that there is temporarily no traffic in said one call or connection,

using the temporarily unused resources for the traffic of at least one other call or connection in the common traffic channel.

12. A method according to claim 11, **characterized** by

detecting that the information flow of the transparent call or connection contains a filler according to the protocol used, such as flags or control frames,

deleting said filler from the transparent information flow at the transmitting end,

transmitting frames or packets of at least one non-transparent or packet-switched connection via the traffic channel in place of said filler,

returning said filler to the received information flow in the receiver before transmitting it further.

13. A mobile station which comprises means for producing two or more simultaneous data calls for one mobile station in a mobile communication system, **characterized** in that said means comprise

means ~~(51, 71, 91, 510)~~ for sharing the capacity of one common traffic channel assigned to two or more simultaneous calls between said simultaneous calls.

14. A mobile station according to claim 13, **characterized** by means ~~(MT)~~ for adjusting the capacity of said common traffic channel dynamically.

15. A mobile station according to claim 13 ~~or 14~~, **characterized** by means ~~(510)~~ for establishing a separate subchannel for each call or each connection of each call in said common traffic channel.

16. A mobile station according to claim 15, **characterized** by means ~~(51, 91, 510)~~ for establishing one radio link protocol or radio access control protocol over the common traffic channel between the mobile station (MS) and the interworking function ~~(IWF, IWU-A, IWU-B)~~,

means ~~(51, 91, 510)~~ for establishing a logical link for each call or each connection of each call inside said one radio link protocol or link access control protocol,

means ~~(51, 91, 510)~~ for transmitting user data of each call or each connection of a call via the respective logical link.

17. A mobile station according to claim 15, **characterized** by means ~~(51, 91, 510)~~ for establishing a radio link protocol or link access control protocol for each call or each connection over the traffic channel between the mobile station and the interworking function,

means ~~(51, 91, 510)~~ for transmitting the user data of each call or each connection of each call via the respective logical link established by the radio link protocol or link access control protocol.

18. A mobile station according to claim 16 ~~or 17~~, **characterized** by means ~~(71)~~ for transmitting data packets of a packet-switched call either interleaved with the protocol frames of the radio link protocol or link access control protocol or encapsulated in the protocol frames.

19. A mobile communication network which comprises means for producing two or more simultaneous calls for a mobile station (MS) in a mobile communication system, **characterized** in that said means comprise

means ~~(MSC)~~ for establishing one traffic channel of the mobile communication network for two or more calls,

means ~~(51, 52, 71, 72, 91, 92, 100, 200)~~ for sharing the capacity of said common traffic channel between said simultaneous calls.

20. A mobile communication network according to claim 19, **characterized** by means ~~(MSC, MS)~~ for adjusting the capacity of said common traffic channel dynamically.

21. A mobile communication network according to claim 19 ~~or 20~~, **characterized** by means ~~(51, 52, 71, 72, 91, 92, 100, 200)~~ for establishing a separate subchannel for each call or each connection of each call in said traffic channel.

22. A mobile communication network according to claim 21, **characterized** by

means ~~(51, 52, 71, 72, 91, 92, 100, 200)~~ for establishing one radio link protocol or link access control protocol over the traffic channel between the mobile station and the interworking function,

means ~~(51, 52, 71, 72, 91, 92, 100, 200)~~ for establishing a logical link for each call or each connection of each call inside said radio link protocol or link access control protocol,

means ~~(51, 52, 71, 72, 91, 92, 100, 200)~~ for transmitting the user data of each call or each connection of each call via the respective logical link.

23. A mobile communication network according to claim 21, **characterized** by

means ~~(51, 52, 71, 72, 91, 92, 100, 200)~~ for establishing a radio link protocol or link access control protocol for each call or each connection over the traffic channel between the mobile station and the interworking function,

means ~~(51, 52, 71, 72, 91, 92, 100, 200)~~ for transmitting the user data of each call or each connection of a call via the respective logical link established by the radio link protocol or link access control protocol.

24. A mobile communication network according to ~~any one of claims 19 to 23~~ claim 19, **characterized** by

means ~~(MSC)~~ for assigning said common traffic channel to the mobile station (MS) when the first call or calls are set up,

means ~~(MSC)~~ for increasing the capacity of the common traffic channel or reallocating the allocated capacity when a new call, or a new connection of an old call, is added to the common traffic channel,

means ~~(MSC)~~ for decreasing the capacity of the common traffic channel or redistributing the allocated capacity when a call or a connection of a call is cleared from the common traffic channel,

means ~~(MSC)~~ for releasing the common traffic channel after the last call has been cleared.

25. A mobile communication network according to ~~any one of claims 19 to 24~~ claim 19, **characterized** in that the type of at least one of the calls is

one of the following: a pure non-transparent call; a pure transparent call; a call comprising two or more connections, ~~e.g. at least one non-transparent connection and at least one transparent connection, and a packet-switched call which shares the capacity of the traffic channel available for circuit-switched non-transparent traffic~~.

26. A mobile communication network according to ~~any one of claims 19 to 25~~, **characterized** by

means ~~(MSC)~~ for detecting that the mobile communication network is temporarily unable to allocate more transmission capacity or the required amount of transmission capacity to the traffic channel when a new call or connection is set up,

means ~~(51, 52, 91, 92, 100, 200)~~ for reallocating the available capacity of the common traffic channel to the calls,

means ~~(MSC)~~ for allocating the requested capacity to the traffic channel later when capacity becomes available in the network.

27. A mobile communication network according to claim 26, **characterized** by

means ~~(MSC)~~ for allocating the requested capacity to transparent calls or connections and the remaining capacity to non-transparent calls or connections when the mobile communication network is temporarily unable to allocate more transmission capacity or the required amount of transmission capacity to the common traffic channel,

means ~~(MSC)~~ for allocating the requested capacity to non-transparent calls or connections later when capacity becomes available in the network.

28. A mobile communication network according to ~~any one of claims 19 to 27~~, **characterized** in that the mobile communication network is arranged to monitor the traffic of at least one call or connection on the traffic channel and to use the temporarily unused resources for the traffic of at least one other call or connection of the same traffic channel when it is detected that there is temporarily no traffic in said at least one call or connection.

29. A mobile communication network according to claim 28, **characterized** by

means ~~(51, 52, 91, 92, 100, 200)~~ for detecting that the information flow of a transparent call or connection contains a filler according to the protocol used, such as flags or control frames,

means ~~(51, 52, 91, 92, 100, 200)~~ for deleting said filler from the transparent information flow at the transmitting end,

means ~~(51, 52, 91, 92, 100, 200)~~ for transmitting frames or packets of at least one non-transparent or packet-switched connection via the common traffic channel instead of said filler,

means ~~(51, 52, 91, 92, 100, 200)~~ for returning said filler to the received transparent information flow in the receiver before the transparent information is transmitted further.

30. A mobile communication network according to claim 22 ~~or 23~~, **characterized** by means ~~(51, 52, 71, 72, 91, 92, 100, 200)~~ for transmitting the data packets of a packet-switched call interleaved with the protocol frames of the radio link protocol or link access control protocol or encapsulated in the protocol frames.

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